

Notice of Allowability

Application No.

10/820,257

Examiner

Dieu-Minh Le

Applicant(s)

JAIN ET AL.

Art Unit

2114

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 10/29/2007 and interview on 12/11/2007.
2. ☒ The allowed claim(s) is/are 14-16, 18-27, 38-40, 42-48, 55-58, 60-66, 74-76, and 78-83 now as [1-43].
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

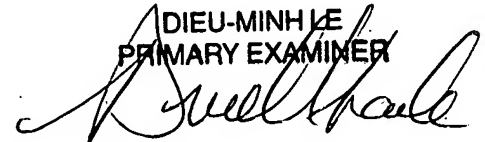
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 12/11/2007.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DIEU-MINH LE
PRIMARY EXAMINER



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1. This office action is in response to the communication filed on 10/29/2007 and the Interview on 12/11/2007.

2. Claims 14-16, 18-27, 38-40, 42-48, 55-58, 60-66, 74-76, and 78-83 now as [1-43] are allowable over the prior art of record; claims 17, 28-37, 41, 49-54, 59, 67-73, 77, and 84-90 have been canceled.

3. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee.

EXAMINER'S AMENDMENT:

IN THE CLAIMS:

Please replace all prior versions of claims in the application with the current listing in the **ATTACHMENT:**

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4. Authorization for this Examiner's Amendment was given in a telephone interview with Ms. Brenna A. Brock, Registration No. 48,509 on 12/11/2007.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dieu-Minh Le whose telephone number is (571) 272-3660. The examiner can normally be reached on Monday - Thursday from 8:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571)272-3644. The Tech Center 2100 phone number is (571) 272-2100.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**DIEU-MINH THAI LE
PRIMARY EXAMINER
ART UNIT 2114**

DML.

11/10/2007

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ATTACHMENT:

LISTING OF CLAIMS:

1-13. (Canceled)

14. (Previously Presented) A method comprising:

identifying a first network component in a first path using
a first identifier stored in a heap data structure,
wherein the first path is between a first node and a
second node;

removing the first identifier from the heap data structure;

identifying a second network component in a second path
using a second identifier stored in the heap data
structure, wherein the second identifier remains in
the heap data structure subsequent to the removing the
first identifier, the second path is between the first
node and the second node, and the first path and the
second path are disjoint;

sending a packet from the first node via the first path;
and

sending a duplicate of the packet from the first node via
the second path.

15. (Previously Presented) The method of claim 14, further
comprising:

identifying a plurality of network components in the first
path using identifiers stored in the heap data
structure; and

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removing the identifiers corresponding to the network components in the first path from the heap data structure.

16. (Previously Presented) The method of claim 15, further comprising:

storing the plurality of identifiers in the heap data structure, wherein each one of the identifiers represents a corresponding one of a plurality of network components.

17. (Canceled)

18. (Previously Presented) The method of claim 14, wherein the first and second network components are nodes.

19. (Previously Presented) The method of claim 14, wherein the first and second network components are links.

20. (Previously Presented) The method of claim 14, further comprising:

removing the second identifier from the heap data structure;

identifying a third network component, in a third path between the first node and the second node, using a third identifier stored in the heap data structure, wherein the third identifier remains in the heap data structure subsequent to the removing the second identifier, and the first path, the second path, and the third path are disjoint.

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21. (Previously Presented) The method of claim 20, further comprising:

 sending an additional duplicate of the packet from the first node via the third path.

22. (Previously Presented) The method of claim 14, further comprising:

 associating a sequence number with each of the packet and the duplicate of the packet.

23. (Previously Presented) The method of claim 22, further comprising:

 receiving both of the packet and the duplicate of the packet at the second node; and
 discarding one of the packet and the duplicate in response to the sequence number associated with each of the packet and the duplicate.

24. (Previously Presented) The method of claim 14, wherein the identifying ones of the network elements in the first path is based on an Open Shortest Path First (OSPF) algorithm.

25. (Previously Presented) The method of claim 14, wherein the packet is a Voice over Internet Protocol (VoIP) packet.

26. (Previously Presented) The method of claim 14, wherein sending the packet comprises sending the packet according to a label-switching protocol.

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27. (Previously Presented) The method of claim 14, further comprising:

storing cost and topology information, wherein the cost and topology information is used to identify the first path.

28-37. (Canceled)

38. (Currently Amended) A computer readable storage medium storing ~~comprising~~ program instructions executable by a processor to:

identify a first network component, in a first path between a first node and a second node, using an identifier stored in a heap data structure;

remove the identifier corresponding to the first network component from the heap data structure; [[and]]

identify a second network component, in a second path between the first node and the second node, using a second identifier stored in the heap data structure, wherein the second identifier remains in the heap data structure subsequent to removal of the first identifier, and the first path and the second path are disjoint;

send a packet from the first node via the first path; and send a duplicate of the packet from the first node via the second path.

39. (Currently Amended) The computer readable storage medium of claim 38, wherein the program instructions are further executable to:

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identify a plurality of network components in the first path using identifiers stored in the heap data structure; and
remove the identifiers corresponding to the network components in the first path from the heap data structure.

40. (Currently Amended) The computer readable storage medium of claim 39, wherein the program instructions are further executable to:

store identifiers in the heap data structure, wherein each one of the identifiers represents a corresponding one of a plurality of network components.

41. (Canceled)

42. (Currently Amended) The computer readable storage medium of claim 38, wherein the first and second network components are nodes.

43. (Currently Amended) The computer readable storage medium of claim 38, wherein the first and second network components are links.

44. (Currently Amended) The computer readable storage medium of claim 38, wherein the program instructions are further executable to:

associate a sequence number with each of the packet and the duplicate of the packet.

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45. (Currently Amended) The computer readable storage medium of claim 38, wherein ones of the network elements in the first path are identified based on an Open Shortest Path First (OSPF) algorithm.

46. (Currently Amended) The computer readable storage medium of claim 45, wherein the packet is a Voice over Internet Protocol (VoIP) packet.

47. (Currently Amended) The computer readable storage medium of claim 38, wherein the packet is sent according to a label-switching protocol.

48. (Currently Amended) The computer readable storage medium of claim 38, wherein the program instructions are further executable to:

store cost and topology information, wherein the cost and topology information is used to identify the first path.

49-54. (Canceled)

55. (Currently Amended) A system comprising:

means for storing a heap data structure;

means for identifying a first network component in a first path using an identifier stored in [[a]] the heap data structure, wherein the first path is between a first node and a second node;

means for removing the identifier corresponding to the first network component from the heap data structure;

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means for identifying a second network component in a second path using a second identifier stored in the heap data structure, wherein the second identifier remains in the heap data structure subsequent to removal of the first identifier, the second path is between the first node and the second node, and the first path and the second path are disjoint;

means for sending a packet from the first node via the first path; and

means for sending a duplicate of the packet from the first node via the second path.

56. (Previously Presented) The system of claim 55, further comprising:

means for identifying a plurality of network components in the first path using identifiers stored in the heap data structure; and

means for removing the identifiers corresponding to the network components in the first path from the heap data structure.

57. (Previously Presented) The system of claim 56, further comprising:

means for identifying a plurality of network components in the first path using identifiers stored in the heap data structure; and

means for removing the identifiers corresponding to the network components in the first path from the heap data structure.

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58. (Previously Presented) The system of claim 55, further comprising:

means for storing identifiers in the heap data structure, wherein each one of the identifiers represents a corresponding one of a plurality of network components.

59. (Canceled)

60. (Previously Presented) The system of claim 55, wherein the first and second network components are nodes.

61. (Previously Presented) The system of claim 55, wherein the first and second network components are links.

62. (Previously Presented) The system of claim 55, further comprising:

means for associating a sequence number with each of the packet and the duplicate of the packet.

63. (Previously Presented) The system of claim 55, wherein ones of the network elements in the first path are identified based on an Open Shortest Path First (OSPF) algorithm.

64. (Previously Presented) The system of claim 55, wherein the packet is a Voice over Internet Protocol (VoIP) packet.

65. (Previously Presented) The system of claim 55, wherein the packet is sent according to a label-switching protocol.

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66. (Previously Presented) The system of claim 55, further comprising:

means for storing cost and topology information, wherein the cost and topology information is used to identify the first path.

67-73. (Canceled)

74. (Previously Presented) A system comprising:

a first node;

a second node;

a first path between the first node and the second node;

and

a second path between the first node and the second node,

wherein the first node is configured to:

identify a first network components in the first path

using a first identifier stored in a heap data structure,

remove the first identifier from the heap data structure,

identify a second network component in the second path

using a second identifier stored in the heap data structure, wherein the second identifier remains in the heap data structure subsequent to removal of the first identifier, and the first path and the second path are disjoint,

send a packet via the first path, and

send a duplicate of the packet via the second path.

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75. (Previously Presented) The system of claim 74, wherein the first node is configured to:

identify a plurality of network components in the first path using identifiers stored in the heap data structure; and

remove the identifiers corresponding to the network components in the first path from the heap data structure.

76. (Previously Presented) The system of claim 75, wherein the first node is configured to:

store identifiers in the heap data structure, each one of the identifiers representing a corresponding one of a plurality of network components.

77. (Canceled)

78. (Previously Presented) The system of claim 74, wherein the first and second network components are nodes.

79. (Previously Presented) The system of claim 74, wherein the first and second network components are links.

80. (Previously Presented) The system of claim 74, wherein the first node is further configured to:

associate a sequence number with each of the packet and the duplicate of the packet.

81. (Previously Presented) The system of claim 74, wherein the first node identifies the ones of the network elements in the

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first path based on an Open Shortest Path First (OSPF) algorithm.

82. (Previously Presented) The system of claim 81, wherein the packet is a Voice over Internet Protocol (VoIP) packet.

83. (Previously Presented) The system of claim 74, wherein the first node is sends the packet according to a label-switching protocol.

84-90. (Canceled)